

## CLAIMS

What is claimed is:

1. An integral motor providing rotational force to the rotary drum of a rotary scanner in order for the optical system of said rotary scanner to sample the original mounted on said rotary drum comprising of:
  - a multidimensional shaft aligning precisely with said rotary drum with numerous diameters for said rotational force to be directly generated onto;
  - a drum base defining the transition element between said multidimensional shaft and said rotary drum;
  - a lock ring defining the linkage element to connect said multidimensional shaft to said drum base;
  - driving components defining mechanics to generate said rotational force directly onto said multidimensional shaft;
  - padding means defining fillings between said multidimensional shaft and said supporting means to eliminate rotational friction damages; and
  - a shield defining a hollow cylindrical shell for said integral motor.
2. The integral motor according to claim 1 wherein said lock ring is a hollow cylindrical form with both ends threaded for said multidimensional shaft to swivel in from one end and said drum base to swivel in from another end.
3. The integral motor according to claim 1 wherein said drum base and said multidimensional shaft have one end threaded for swivelling in said lock ring.
4. The integral motor according to claim 1 wherein said driving components comprising of:
  - a rotor defining an arrangement of permanent magnets to attach to said multidimensional shaft's center circumference;
  - a stator defining an arrangement of coils to attach to the inside circumference of said shield aligning with said rotor; and
  - a magnetic field sensor defining a device to detect the surrounding magnetic field to attach to said stator.
5. The integral motor according to claim 1 wherein said padding means comprises two different size bearings mounted between said multidimensional shaft ends and said supporting means.

6. The integral motor according to claim 1 wherein:
- all numerous dimensions of said multidimensional shaft are at the same center point;
  - said drum base aligns center point to center point with said multidimensional shaft;
  - all said padding means aligns center point to center point with said multidimensional shaft;
  - said shield aligns center point to center point with said multidimensional shaft; and
  - all said driving components align center point to center point with said multidimensional shaft.
7. The integral motor according to claim 1 wherein said integral motor component's edges is parallel with said multidimensional shaft's edges between said numerous diameters.
8. The integral motor according to claim 7 wherein said multidimensional shaft's edges are generated by the slopes of the increment between said numerous diameters of said multidimensional shaft, and all these said edges are in right angles meaning all said slopes approach infinity.
9. The integral motor according to claim 8 wherein said drum base, said driving components and said padding means align precisely with said multidimensional shaft by fitting to the said right-angled edges between said numerous diameters.
10. The integral motor according to claim 1 further comprises:
- supporting means defining a structure for stabilizing and securing said integral motor onto a base; and
  - bore covers for providing concealments at the ends of said shield.
11. The integral motor according to claim 10 wherein said supporting means comprises two L-shaped brackets with one side of each said bracket mounted to one of said bore covers and the other side mounted to said base.